

CLAIMS

1. A mounting method of a magnetic head component, comprising the steps of:

providing a magnetic head slider or a precise positioning actuator with a magnetic head slider, and a suspension; and

electrically and mechanically connecting said magnetic head slider or said precise positioning actuator to said suspension, by performing molten-solder connections using solder balls with cores that will not melt even at a solder-melting temperature.

2. The method as claimed in claim 1, wherein the connecting step comprises placing each of said solder balls to contact at least one of a terminal pad formed on said magnetic head slider or on said precise positioning actuator and a connection pad formed on a lead conductor member supported by said suspension, and thereafter performing said molten-solder connections.

3. The method as claimed in claim 1, wherein said connecting step comprises performing said molten solder by laser reflowing.

4. The method as claimed in claim 1, wherein said

providing step comprises providing solder balls with cores, each core having a surface layer that is in contact with solder, and wherein at least said surface layer of each core is made of a conductive material.

5. The method as claimed in claim 4, wherein said conductive material contains at least copper.

6. The method as claimed in claim 1, wherein said providing step comprises providing solder balls with cores, and wherein the whole of each core is made of a conductive material.

7. The method as claimed in claim 6, wherein said conductive material contains at least copper.

8. The method as claimed in claim 1, wherein said providing step comprises providing solder balls with cores, each core having a surface layer and an inside body, and wherein said surface layer of each core is made of a conductive material and said inside body of each core is made of a resin material.

9. The method as claimed in claim 8, wherein said conductive material contains at least copper.

10. The method as claimed in claim 1, wherein said providing step comprises providing solder balls with cores, each core having a surface layer that is in contact with solder, and wherein at least said surface layer of each core is made of a material with a high solder wettability and a high thermal conductivity.

11. The method as claimed in claim 1, wherein said providing step comprises providing solder balls with cores, each core constituting 30-70 % of the whole of each solder ball by volume.

12. The method as claimed in claim 1, wherein said providing step comprises providing solder balls with cores, and wherein each core has a diameter smaller than a longitudinal direction length of each terminal pad formed on said magnetic head slider or on said precise positioning actuator.

13. The method as claimed in claim 1, wherein said method further comprises a step of mechanically fixing said magnetic head slider to said suspension, by performing molten-solder connections between dummy terminal pads formed on said magnetic head slider and dummy pads formed on said suspension

using solder balls with cores that will not melt even at a solder-melting temperature.

14. The method as claimed in claim 13, wherein said fixing step comprises grounding said dummy terminal pads.

15. A magnetic head device comprising:

a magnetic head slider with at least one magnetic head element and terminal pads electrically connected to said at least one magnetic head element; and

a suspension with connection pads electrically connected to said terminal pads,

said terminal pads and said connection pads being electrically connected with each other by molten-solder connections using solder balls with cores that will not melt even at a solder-melting temperature.

16. The magnetic head device as claimed in claim 15, wherein said device further comprises a precise positioning actuator connected to said suspension by molten-solder connections using solder balls with cores that will not melt even at a solder-melting temperature.

17. The magnetic head device as claimed in claim 15, wherein said magnetic head slider has dummy terminal pads on

its first surface and said suspension has dummy pads, and wherein said dummy terminal pads and said dummy pads are electrically connected with each other by molten-solder connections using solder balls with cores that will not melt even at a solder-melting temperature.

18. The magnetic head device as claimed in claim 17, wherein said dummy terminal pads are grounded.

19. The magnetic head device as claimed in claim 17, wherein said dummy terminal pads are formed on a second surface of said magnetic head slider, which is opposite to said first surface.

20. The magnetic head device as claimed in claim 15, wherein each core has a surface layer that is in contact with solder, and wherein at least said surface layer of each core is made of a conductive material.

21. The magnetic head device as claimed in claim 20, wherein said conductive material contains at least copper.

22. The magnetic head device as claimed in claim 15, wherein the whole of each core is made of a conductive material.

23. The magnetic head device as claimed in claim 22,
wherein said conductive material contains at least copper.

24. The magnetic head device as claimed in claim 15,
wherein each core has a surface layer and an inside body, and
wherein said surface layer of each core is made of a
conductive material and said inside body of each core is made
of a resin material.

25. The magnetic head device as claimed in claim 24,
wherein said conductive material contains at least copper.

26. The magnetic head device as claimed in claim 15,
wherein each core has a surface layer that is in contact with
solder, and wherein at least said surface layer of each core
is made of a material with a high solder wettability and a
high thermal conductivity.

27. The magnetic head device as claimed in claim 15,
wherein each core constitutes 30-70 % of the whole of each
solder ball by volume.

28. The magnetic head device as claimed in claim 15,
wherein said each core has a diameter smaller than a

longitudinal direction length of each terminal pad of said magnetic head slider.

29. A manufacturing method of a magnetic head device, comprising the steps of:

placing a magnetic head slider with at least one magnetic head element and terminal pads electrically connected to said at least one magnetic head element on a suspension with connection pads; and

electrically connecting said terminal pads of said magnetic head slider to said connection pads of said suspension, by performing molten-solder connections using solder balls with cores that will not melt even at a solder-melting temperature.

30. The manufacturing method as claimed in claim 29, wherein said method further comprises a step of testing characteristics of said magnetic head device after performing the molten-solder connections so as to judge whether the magnetic head device is defective, and a step of reworking the magnetic head device when it is judged as defective.

31. The manufacturing method as claimed in claim 29, wherein said method further comprises a step of testing characteristics of said magnetic head device before performing

molten-solder connections where said solder balls are tentatively attached between said terminal pads and said connection pads so as to judge whether the magnetic head device is defective, and a step of performing the molten-solder connections when it is judged as not defective and performing rework of the magnetic head device when it is judged as defective.